

Commonwealth Center for Advanced Manufacturing (CCAM)

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October 18, 2013



Advanced Manufacturing Innovation Zone

INDUSTRY DRIVEN

- Multiple industry and university partners
- Applied research
- Industry-defined problems with easy transition of results to commercialization



UNIVERSITY DRIVEN

- Basic research
- Experimental engine test facility
- Results transition easily into CCAM



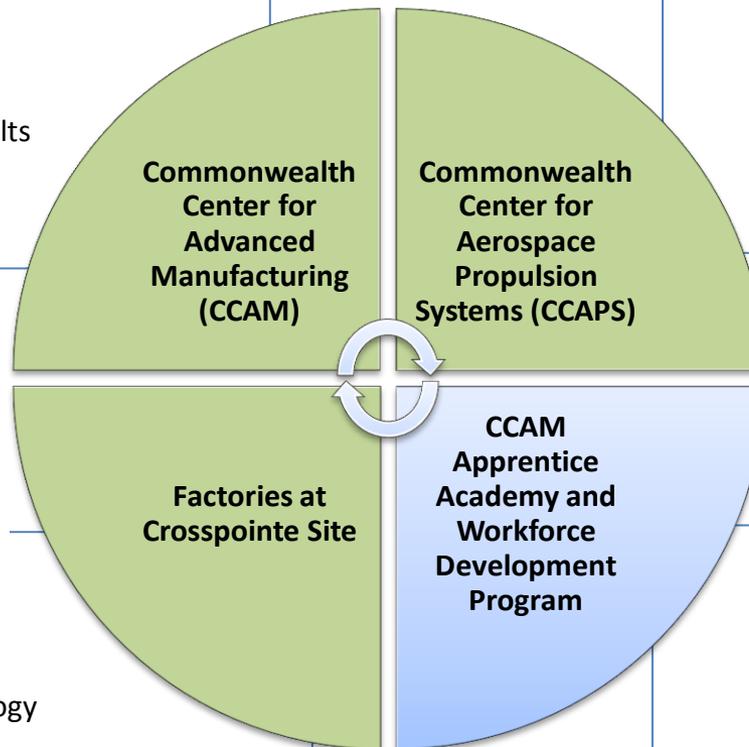
INDUSTRY OWNED AND OPERATED

- Advanced Manufacturing
- Operational Q1 2011
- Industry “pull” for technology and jobs



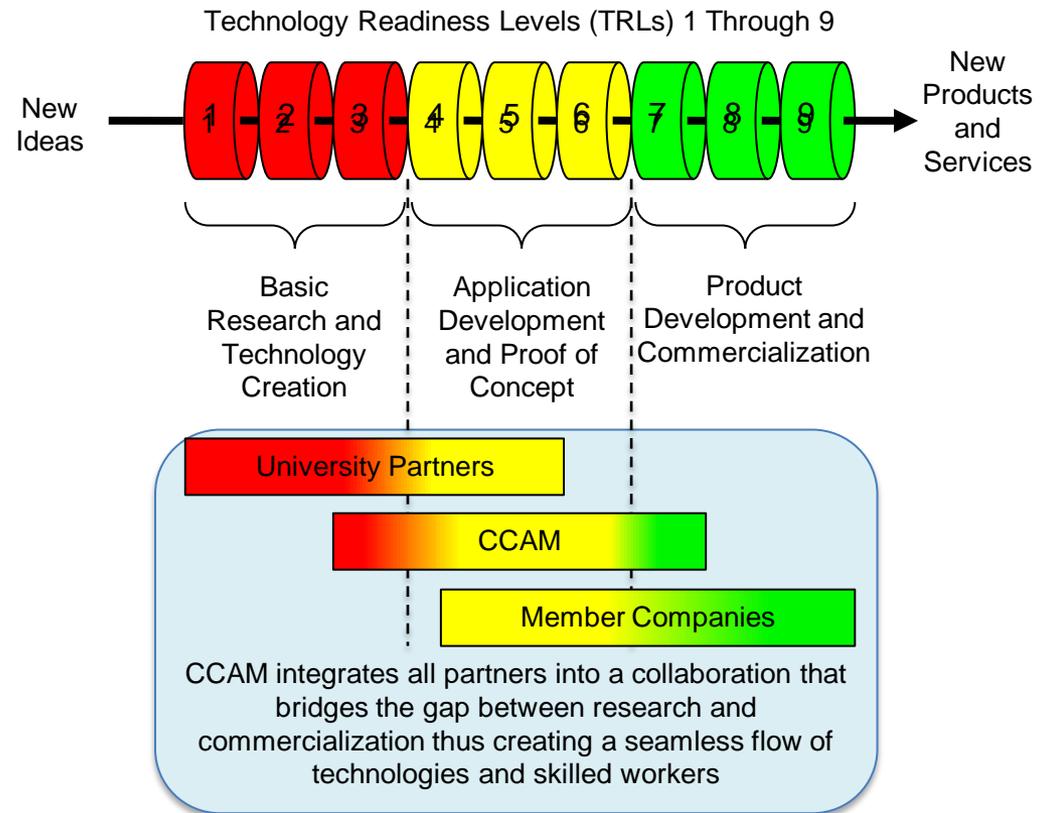
INDUSTRY / COMMUNITY COLLEGE DRIVEN

- Hands-on laboratory
- Industry applications
- Innovative, multi-faceted curricula



Mission

- Bridge the gap between research and commercialization
 - Accelerate technology into markets
 - Demonstrate on real problems
- Foster collaboration among diverse industry sectors
 - Directed Research for the exclusive benefit of a member
 - Generic Research for the benefit of all members
- Lower R&D costs for member companies
 - Shared facilities and personnel
 - Shared pre-competitive research
- Train next generation of technology leaders
 - Provide market ready experience
 - Connect industry with students



CCAM Membership

Industry Driven Partnership Growing Advanced Manufacturing Capabilities



CHROMALLOY



Rolls-Royce

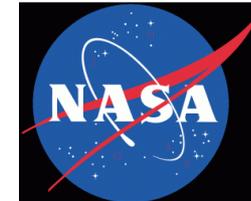


**Newport News
Shipbuilding**
A Division of Huntington
Ingalls Industries



SIEMENS

SULZER



+GF+

AgieCharmilles

Delivering “production-ready” manufacturing solutions at the speed of business with the intellectual rigor and innovation of universities.

CCAM Applied Research Facility



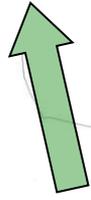
**62,000 square foot research facility
opened September 10, 2012**

**16,000 square feet of high bay
experimental research space**

**Research equipment
and office space**

Expansion Plans

Additional acreage available



Additional Research Facility

Additional Research Wing

COMMON NAME	BOTANICAL NAME	SIZE	COMMENTS
LARGE TREES			
Redburned Red Maple	<i>Acer rubrum 'Redsunder'</i>	2'5" cal	Specimen
American Holly	<i>Ilex opaca</i>	8'-10'	Specimen
Green Ash	<i>Fraxinus pennsylvanica</i>	2.5" cal	Specimen
American Beech	<i>Fagus grandifolia</i>	2.5" cal	Specimen
Pink Oak	<i>Quercus palustris</i>	2.5" cal	Specimen
Shortleaf Pine	<i>Pinus echinata</i>	8'-10'	Specimen
SMALL TREES			
Canada Snowberry	<i>Amelanchier canadensis</i>	10'-12'	3 spec max.
Redbud	<i>Cercis canadensis</i>	10'-12'	Specimen
River Birch	<i>Betula nigra</i>	10'-12'	2-3 spec.
Swamp Magnolia	<i>Magnolia virginiana</i>	10'-12'	3 spec max.
Billy Dogwood	<i>Cornus amomum</i>	8'-10'	Specimen
SHRUBS			
Black Hawthorn	<i>Viburnum prunifolium</i>	24"-30"	Install at 24"-30" O.C.
Butterbush	<i>Cephalanthus occidentalis</i>	24"-30"	Install at 24"-30" O.C.
New Jersey Tea	<i>Ceanothus americanus</i>	18"-24"	Install at 24" O.C.
Mountain Laurel	<i>Kalmia latifolia</i>	24"-30"	Install at 24"-30" O.C.
Blue Pines Juniper	<i>Juniperus chinensis 'Pfitzeriana Glauca'</i>	24"-30"	Install 10" O.C.
Spicebush	<i>Lindera benzoin</i>	24"-30"	Install at 24"-30" O.C.
Witch hazel	<i>Hemericia virginiana</i>	30"-30"	Install at 30"-30" O.C.
GROUNDCOVER PERENNIALS & ORNAMENTAL GRASSES			
Big Bluestem	<i>Andropogon gerardii</i>	6" hgt. min	12" O.C. triangular spacing
Kellogg Bluegrass	<i>Miscanthus sinensis 'Adagio'</i>	6" hgt. min	12" O.C. triangular spacing
Slough Blue Fescue	<i>Festuca ovina 'Elijah Blue'</i>	6" hgt. min	12" O.C. triangular spacing
Pachystima	<i>Pachystima terrecristata</i>	4" hgt. min	12" O.C. triangular spacing
Liriodie	<i>Liriodie Klucherii</i>	6" hgt. min	12" O.C. triangular spacing
Starke's Eye Susan	<i>Rubricola flajula 'Early Bird Gold'</i>	10"-12" hgt. min	12" O.C. triangular spacing
Turf			
Hybrid Tall Fescue			Low maintenance turf
Festuca turf			Low maintenance turf

DRY POND PLANTED WITH WATER TOLERANT TREES, SHRUBS AND HERBACEOUS PLANTS. LARGE TREES AT THE PERIMETER TO AID IN REDUCING THE HEAT ISLAND AFFECT ON ADJACENT DRIVES. MAINTAIN EXISTING WOODED AREA AS A BACKDROP TO THE DEVELOPMENT.

LOW EVERGREEN SCREEN HEDGE AT THE VEHICLE DROP-OFF

CONCRETE STONE UNDER THE BUILDING OVERHANG & A WALKWAY TO THE BUILDING WITH A BIG DESIGN PATTERN THAT EXPRESSES DIRECTION TO THE BUILDING

SMALL ORNAMENTAL FLOWERING TREES PLANTED ALONG THE AXIAL DRIVE PLACEMENT IS TO BE SIMILAR AS IF THE TREES WERE FOUND IN A NATURAL SETTING

WALKING PATH TO THE BUILDING WITH A PAVING DESIGN/PATTERN THAT EXPRESSES DIRECTION TO THE BUILDING. NARROW LINEAL SCORING PATTERN TOWARDS THE BUILDING. PAVING MATERIAL TO BE DETERMINED DURING DESIGN DEVELOPMENT

MAINTAIN EXISTING WOODED AREA AS A BACKDROP TO THE DEVELOPMENT

LARGE STREET TREES AND A LANDSCAPE BERTH TO CREATE A SENSE OF ENTRY AND PROVIDE DIRECTION TO THE DRIVE AXIAL DRIVE APPROACHING THE BUILDING

MAINTAIN VIEW-SHED TO THE BUILDING FROM THE SITE ENTRY POINT ON QUAKER ROAD

CCAM ENTRANCE SIGN WITH LOW EVERGREEN SHRUBS BEHIND THE SIGN. LANDSCAPE DESIGN AROUND TO SIGN TO BE FURTHER STUDIED ONCE THE SIGN DESIGN IS COMPLETE

INTERNAL ISLAND LANDSCAPE PLANTS SHALL NOT OBSTRUCT THE VIEW TO THE BUILDING. PLANT MATERIALS SHALL CONSIST OF SHRUBS, GRASSES AND HERBACEOUS PLANTS

INVERTED INTERNAL PARKING ISLANDS DESIGNED AS BIO-FILTERS WITH WATER TOLERANT PLANT MATERIAL WHERE FEASIBLE

LAWN AREAS TO BE PLANTED WITH HYBRID TALL FESCUE THAT IS HEAT AND DROUGHT RESISTANT (I.E. FALCON IV TURF) OR EQUAL

LARGE SHADE TREES TO AIDE IN REDUCING THE HEAT ISLAND AFFECT

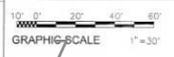
MAINTAIN EXISTING TREES AS A BUFFER ALONG WEST QUAKER ROAD. AMEND THE BUFFER AS NECESSARY

Initial CCAM Building

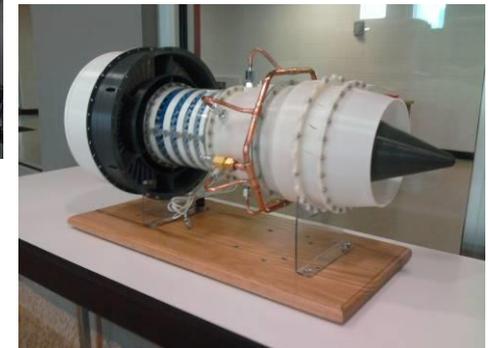
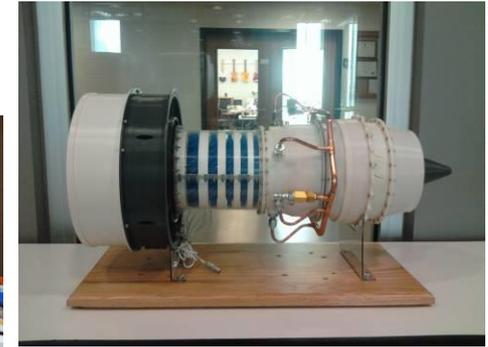
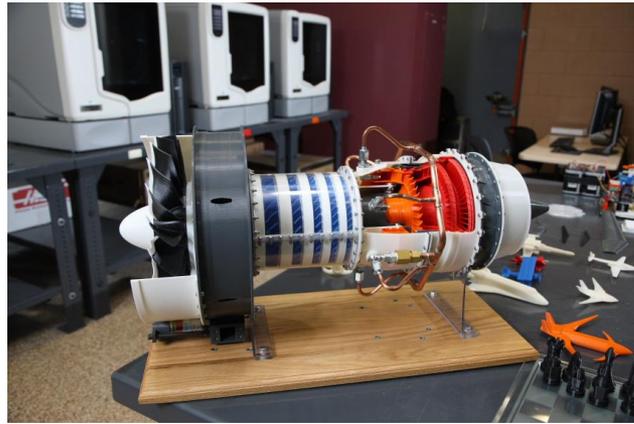
High Bay Expansion



WEST QUAKER ROAD



Advanced Manufacturing Laboratories at UVA



- 20 new computers with CAD software (other computers available outside the lab)
- 6 Fused Deposition Modeling (FDM) plastic printers
- 1 Fortus 400mc FDM for larger parts with higher resolution
- 1 CNC milling machine
- 1 Full-time lab engineer and CAD specialist (Dwight Dart, PhD)
- 1 Assistant Professor focused on teaching the lab related courses (Gavin Garner, PhD)
- 1 Instructor for jet engine design course sequence (David Sheffler)

CCAM Workforce Development Program

- Funded by the Virginia Tobacco Indemnification and Community Revitalization Commission
- Workforce Study completed for the Tobacco Region
 - Performed by the Boston Consulting Group under contract with CCAM
 - Report is publicly available
- CCAM Director of Workforce Development Hired (started October 1, 2013)
- Working committees created with strong industry and education participation
 - Steering Committee – CCAM
 - Curriculum Committee
 - Marketing Committee
 - Resources Committee
- Focus is on mid-level skills
 - Machinists
 - Welders
 - Industrial Machinery Mechanics
- Focus is on industry-recognized credentials
- Creating three regional centers of excellence for training
 - Equipped and staffed to each produce credentialed workers in three focus skills
 - Goal is 75 certified graduates from each regional center by 2017

Questions

Contact Information

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